Littleleaf Linden (Tilia cordata) One of The Finest Street and Home Trees

Plant Propagators Society Meeting, Wade Park Manor, Cleveland, Ohio, December 12-13

Facts About Soil Conditioners — *Howard K. Nason*

Line Clearance In The South — *Stephen G. Pugh*

October-November 1952 — *The Journal of American Arboriculture* — Vol. 12.—No. 6

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ALONG THE WAY With . . . EDW. SCANLON

■ Hope our boy LOUIE the CHADWICK got some NICE KODA SHOTS while SOJOURNING in MERRIE ENGLAND —he's slated, in CASE HE DOESN'T KNOW IT—to show them at the 2nd PLANT PROPAGATORS SOCIETY meeting in CLEVELAND, DEC. 12 - 13.

■ **LOUIE was on the program of the INTERNATIONAL HORTICULTURAL CONGRESS in London. A DESERVED HONOR.**

■ BILL VAN HOOK, Supt. of Parks at ROCHESTER, MINN., and MRS. V. H. stopped at the RANCHO en route to MONTREAL. Only thing wrong — IT WAS TOO SHORT A VISIT.

■ **In the article, IN THE LAST ISSUE, on the use of a HELICOPTER SPRAYING in ANDOVER, MASS., we FORGOT TO CREDIT the pictures. They were MADE AVAILABLE by "LOOK STUDIO" in Andover. Thanks to DICK ABBOTT for catching THIS OVERSIGHT.**

■ Our GOOD FRIEND the NATIONAL ARBOR DAY MAN OF DELAVAN, WIS., PAUL LANGE has RETIRED as a member of the DELAVAN PARK BOARD. PAUL had served for 25 years on the Board. MANY NICE THINGS were said in DELAVAN PAPERS on PAUL'S PROGRESSIVE STEWARDSHIP.

■ **Naturally ANY COMMIE WOULD RESENT and TRY TO SMEAR SENATOR McCARTHY — you know THE TRUTH, and a STRAIGHT HARD RIGHT to the kisser ALWAYS HURTS —it's easy to see WHO IS BEING HURT — But, THE WISCONSIN VOTERS don't think HE'S SUCH A BAD BOY as the COMMIES SAY.**

■ In DOC CARTERS fine article in the LAST ISSUE of TREES—"MODERN PRACTICES IN TREE"—the printers INADVERTENTLY LEFT OUT A LINE of type that made the text SORTA CONFUSIN. On page 16 TOP PARAGRAPH of the THIRD COLUMN, the last three lines should have read—"Spraying annually is necessary to control the elm bark beetle that carries the DUTCH ELM DISEASE AND THE ELM LEAF HOPPER THAT CARRIES THE ELM phloem necrosis virus."

■ **The PROCEEDINGS of the first annual PLANT PROPAGATORS SOCIETY meeting will be OFF THE PRESS about the time you READ THIS. A very WORTHWHILE PUBLICATION — (2 bucks)—and we hope the BEGINNING OF A FINE functional SOCIETY.**

■ The SECOND ANNUAL meeting of the PLANT PROPAGATORS SOCIETY will be held in CLEVELAND — note this slight change of date—DEC. 12 - 13 —at the WADE PARK MANOR (right across THE SWAMP from the GARDEN CENTER, where ARNOLD DAVIS hangs out).

■ **The ILLINOIS "GOOD HUMOR" man is wowing them on TV with his NEW BRAND of "I SCREAM."**

■ I'll bet LONG JOHN "SILVER" BATSON of WASHINGTON is a BUSY MAN these days—GETTING READY to plant his SILVER MAPLES. TOO BAD you won't STILL BE CITY FORESTER there in ABOUT 20 YEARS to get ALL THE HEADACHES—if not SOONER—You're a BAD BOY, JOHNNY.

■ **If you WANT TO SEE SOMETHING out of this world GET A LOAD of the NEW PITTSBURGH AIRPORT. Stayed there one night recently—after talking to WALT MORROWS, Western Penna Nurseryman's Ass'n. A LOOK INTO THE FUTURE—1st class hotel rooms—big movie theatre—cocktail bar—night club with spacious dance floor—escalators—plenty of office space—congratulations Pittsburgh.**

■ I NOTICED that Charley Sweeney, the CITY FORESTER of itchburg, Mass., (never mind the "F" printer—same difference) WAS CONSPICUOUS by his absence from the BOSTON SHADE TREE CONFERENCE. Probably afraid he COULDN'T LIVE UP to his boasts on how he WOULD REDEEM the fair name of ITCHBURG.

■ CARL THE O'FENNER is a VERY PROUD papa cause DAUGHTER RHONDA won a BREAD BAKING PRIZE at the County Fair up there IN MICHIGAN — how about a SAMPLE POP? (and he just about WILL TOO!)

■ **After being "OFFAGAIN" AND "ONAGAIN" several times STEVE O'-ROURKE is finally set for a NEW JOB in ECUADOR. A bunch of, "shots" had him PUNCHING HIS OWN EARS but finally he recovered. SORRY TO SEE you leave STEVE and we'll MISS YOU at the PROPAGATORS MEETING — Best of luck. STEVES' address will be, after Dec. 1st.**

Estacion Experimentale Agricola
Pichilingue
c/o U. S. Counsel-General
Guayaquil, Ecuador
DROP HIM a line, HE'LL LOVE it.

■ MAC AND ELSIE McINTIRE, Pres. and Mrs. Pres. of the WESTERN CHAPTER, N.S.T.C., stopped overnite at the RANCHO on their way back to CALIFORNIA. We chewed OVER 20 YEARS of WESTERN SHADE TREE CONFERENCE history, and now yours TRULY is SET TO WRITE a paper on the HISTORY FOR THE 20th MEETING to be held in SANTA MONICA where the first one WAS HELD IN 1934. Tempus fugits.

■ **The SHADE TREE CONFERENCE in Boston ATTRACTED 601—fine Showing. DR. GEORGE LANGFORD was elected PRESIDENT and AL MESERVE is the new VICE PRES. The next conference WILL BE HELD IN CHICAGO.**

■ Spring and summer I DON'T CARE ABOUT the ASHES—except F. ORNUS —and with the UNKNOWN DISEASE that is taking a HEAVY TOLL of the NATIVE SPECIES they are MUCH LESS ATTRACTIVE, but COME FALL and the GORGEOUS DEEP PLUM AND CRIMSON HUES of the foliage make you feel very uncertain. This year THE COLORS ARE SUPERB.

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TREES MAGAZINE
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The Editors of TREES invite discussions, comments and all types of literary materials pertaining to trees and tree preservation from any person engaged either in the scientific advancement or commercial development of the field.

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■ **SOMEONE TOLD ME, at one time, in CALIFORNIA that JUNIPERUS CHINENSIS TORULOSA was NOT HARDY in ZONE 4 OR 5, now I see where A CALIFORNIA GROWER is Advertising them FOR SALE IN THE EAST. I hope my INFORMANT WAS WRONG—THIS PLANT is a MAGNIFICIENTLY DISTINCTIVE THING that has a CHARM AND TWISTED PERSONALITY possessed by NO OTHER CONIFER. I want some.**

■ Theres A PICTURE in the June issue of UNASYLVA (United Nations Forestry Mag.) showing a MATURE FOREST of MONKEY PUZZLE TREES (ARAUCARIA ARAUCARIA) in Chile. Taken FROM THE AIR and the many THOUSANDS OF PERFECTLY ROUNDED TOPS look like a BUSY DAY on an UMBRELLA DOTTED BEACH. Must be a MARVELLOUS SIGHT.

THE COVER PICTURE. The Littleleaf Linden (Tilia cordata) is a tree that has as wide a range of use for street purposes as any other single tree we know. In this country it will seldom exceed 30 or 35 feet in 40 years. It holds its color thru the hot summer and its small trunk and root system are fine recommendations for use in limited "treelawns", under wires and with shallow setbacks. A high rated street tree.

WHAT—WHERE—WHEN

Landscape Gardeners Conference, Michigan State College, East Lansing. Dec. 11 and 12.

Joint Forestry Meeting (American and Canadian) Montreal, Nov. 17-20.

Plant Propagators Society, Wade Park Manor, Cleveland. Dec. 12 and 13.

Oct.-Nov., 1952 **Journal of the National Arborist Association** Vol. 12—No. 6

EDWARD H. SCANLON, Editor
7621 Lewis Rd., Olmsted Falls, Ohio
ADams 5-2357

"No place is complete without trees. A home without trees is charmless; a road without trees is shadeless; a park without trees is purposeless; A COUNTRY WITHOUT TREES IS HOPELESS."

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Out On A Limb

SHADE TREE CONFERENCE TO CALIFORNIA

It is nice to learn that the 1955 National Shade Tree Conference will be held somewhere in California. This was a decision by the Executive Committee and so is final and legal.

The problem now before the California members of the Western Chapter is where to hold the meeting—North or South—and that will elicit no little debate. The furtherest west the national meeting has ever been held is St. Louis, this was in 1938. The officers of the conference have effectively taken the meeting into many sections of the country to spread the word on tree care. The results have been entirely satisfactory as the widespread publicity that has attended each conference attests.

One of the limiting factors in choosing a site for a large meeting of this type is the problem of finding a hotel large enough to accommodate a gathering of 600 or more. This requires a major hotel and will in all probability rule out all California cities except Los Angeles and the Bay region, San Francisco or Oakland.

California has tremendous appeal; its magnificent Redwood forests of coast and Sierra; its limitless and colorful deserts and awe-inspiring mountains; the beautiful Pacific and rugged shoreline—but, the appeal of California would require reams to list all of the places to see and after living there for twenty years without having seen all of this far flung state it is obvious that a one or two-week visit will be vastly inadequate to more than visit a very few of the countless "places to see." So it would behoove all persons from the east who plan to attend this meeting to prepare a careful itinerary.

The trees in either Southern or Northern California will of course present many entirely strange species to most eastern arborists. In Northern California there will be found a closer relationship to eastern flora with many elms, maples, flowering plums, planes and other such trees, with of course the eucalypts, acacias and many unknown species. As one progresses south the arboreal picture changes until on reaching Los Angeles, little resemblance to the east is found. Here subtropical species abound.

The local committee will have to decide between the glamour of Los Angeles or the charm of San Francisco. We believe there is no other city in the country with the individuality of San Francisco—its cable cars—Golden Gate and Bay bridges—Chinatown—Nob Hill—unsurpassed eating places—it has charm, and fine hotels. Los Angeles has its movie studios and hustle and bustle, and fine hotels. Since the war most of the old Spanish influence that once permeated the atmosphere of Southern California has disappeared, in fact it started to go in the middle 30's, but it is still the fabulous movie capitol of the world.

We don't envy the committee its job but we do look forward to the 30th National Shade Tree Conference in California.

"Joyce Kilmers" Butcher Trees and Poetry

We had some erudite college boys working for the Cleveland Division of Shade Trees this summer and one day, or rather one evening, I'm sure they wouldn't waste city time, they composed the following masterpiece:

We are loyal to you D.S.T.
We will hunt down the dread D.E.D.
With "Ed" at the helm,
We will cut down each elm,
Amid shouts of: "Woodsman, spare that tree!"

With maple or sneezy sycamore,
We are tree surgeons right to the core.
With pole saws and axes,
And government taxes,
We'll butcher city trees more and more.

With a stick we knock down ten-inch trees,
'Cause Ed Scanlon says they are a breeze,
We dare not get tired,
Or we might get fired,
'Cause power saws make ours a life of ease.

Now here is the moral, you see.
When you work for the D. S. & T.,
You take your pay cut,
And you keep your mouth shut,
'Cause, brother, you're a city employee!

Kevin Tobin
Rip Reilly

TREE EXPERTS ATTENTION

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Propagators Meet In Cleveland Dec. 12-13

The second annual meeting of the Plant Propagators Society will be held in Cleveland at the Wade Park Manor, on E. 107th St., on Dec. 12th and 13th. The hotel is located close to the Cleveland Garden Center.

The first day will be devoted to society business and possibly some discussions. The second day will be occupied with a number of papers although a formal program has not yet been completed. It is planned to discuss propagation of Holly, Viburnum, Oaks and Maples.

The proceedings of the first meeting held in Cleveland last November will be off the press shortly, and will be distributed promptly to all who have ordered copies.

The complete program will be mailed out when completed and will be published in TREES Magazine and the American Nurseryman.

WANTED BY THE FBI
UNLAWFUL FLIGHT TO AVOID PROSECUTION (MURDER)

KENNETH LEE MAURER

Description

Age 19; born, December 16, 1932, Dearborn, Michigan; height, 5'-10"; weight 150 lbs.; build, slender; eyes, blue; hair, dark brown; complexion, medium; race, White; nationality, American; education, 10th grade; occupations, tree trimmer, gardener, store clerk. Remarks, has noticeable freckles, protruding ears, teeth slightly protruding, is stoop-shouldered, is fond of all forms of horticulture. He was last employed by the *City of Detroit as a tree trimmer* and he may again seek employment in this line of work. FBI No. 929, 302 A. No fingerprints available.

CAUTION

MAURER IS BEING SOUGHT FOR MULTIPLE MURDERS. HE MAY BE ARMED AND SHOULD BE CONSIDERED DANGEROUS. HE HAS DISPLAYED OCCASIONAL FITS OF TEMPER IN THE PAST AND EXTREME CARE SHOULD BE EXERCISED IN APPROACHING HIM.

A Complaint was filed before a U. S. District Judge, December 3, 1951, at Detroit, Michigan, charging Maurer with a violation of Title 18, U. S. Code, Section 1073, in that he fled from the State of Michigan to avoid prosecution for the crime of murder.

If you are in possession of any information regarding the whereabouts of this individual, please communicate with the undersigned, or with the nearest office of the Federal Bureau of Investigation, the address and telephone number of which are listed on the first page of your local phone directory.

UNITED STATES DEPARTMENT OF JUSTICE
JOHN EDGAR HOOVER, DIRECTOR
FEDERAL BUREAU OF INVESTIGATION
WASHINGTON, D. C.
TELEPHONE, NATIONAL 7117

Trees...

Line Clearance In the South

STEPHEN G. PUGH
Southern Bell Telephone and Telegraph Co.
Atlanta, Georgia

It has been said that a public utility is "affected with a public interest," which is a rather indefinite way of saying that such service is essential to the public welfare. From the first primitive exchange which was established at New Haven, Connecticut, and which consisted of a switchboard interconnecting eight lines and 21 subscribers there has grown in 73 years a nationwide system that today links together more than 35,000,000 telephones. To reach for the telephone has become second nature to most of us; more than 180 million times each day the people of America pick up their telephones to talk across the street, across the nation, or across the ocean. The telephone is more than an instrument—it is a system.

The apparent ease with which telephone connections are made gives an impression of simplicity that is deceiving, for when you lift your telephone to make or receive a call, you open an electrical path that goes through an intricate maze of wires and sensitive equipment. The sensitivity of the telephone and the connecting equipment which enable one person to talk to another, whether far or near, with almost perfect audibility also makes it imperative that the telephone lines meet certain transmission standards. There are many factors which affect the transmission effectiveness of telephone lines and equipment, a major one being trees, vines, and other vegetative growth. Interference by trees results in such direct troubles as short circuits, cross circuits, open breaks, leakage on one or both sides of the circuit, leakage from wire to wire, and abrasions or cracks in cables and drops. In addition to these direct troubles, trees cause indirect troubles such as providing paths to ground for lightning which may jump across to telephone lines, and providing for squirrels ideal paths to cables which they cut with their teeth. All of these troubles result in circuit faults such as noisy circuits, crosstalk, wrong numbers when dialing, repeater sing, loss of power, or complete loss of the circuit. Where power circuits are in contact with the tree, there is also a possibility of a leakage of current from power wire to telephone wire. Any of these conditions result in unsatisfactory service which is adverse to public welfare.

To clear or eliminate such troubles it is necessary periodically to trim the interfering growth or remove it entirely. There is an alternative which is frequently proposed by the laymen, that is to relocate the line or to place it underground. Both of these methods are employed frequently where conditions warrant them. It is obvious that the relocation of lines in most cases would simply shift the tree problem from Mrs. Jones' property to Mrs. Smith's property. Placing all lines underground would then seem to be the ideal solution for both the telephone company and the property owner. This is definitely not true. In fact, due to the severance of roots, more cases of serious tree injury have resulted from placing underground cable than have occurred from trimming trees to provide clearance for overhead conductors. In addition, underground cable introduces serious transmission and maintenance problems, such as electrolysis, greater electrical resistance due to the small wires necessary to keep the cable to a manageable size, and the vulnerability of the cable to excavation of any kind. However, the Bell System is placing miles of cable underground each year. At the present time, there is more than 110 million miles of wire in the Bell System alone, of which three-fifths is underground and 96% of it is in cable. Trees alone cannot be the determining factor for relocating lines or placing them underground. Other factors must also be contributive to the locating of lines.

The line clearance methods employed by the utilities have been the subject of criticism for many years. Some of this criticism has been justified but most of it, particularly in the past decade, has been unjust. The telephone company realizes fully that when trimming is necessary to clear telephone wires, the appearance and welfare of the tree must be given consideration if healthy public relations are to be maintained. In the Southern Bell area there are 67,173 pole miles of exchange and toll lines. Based on an average density of 75 trees per mile, there are approximately two and three-quarter million trees affecting our lines which have to be trimmed on a cycle of from one to three years. Thus, considering the number of trees trimmed each year, the number of cases of "tree mutilation" is negligible.

The line clearance policy of the Southern Bell Telephone Company is very definite and one which I believe will meet your approval. In brief, our policy is as follows:

a. All trimming, both initial and subsequent, shall be done in accordance with the best recognized and approved principles of modern arboriculture and tree surgery.
b. All trimming shall be done in such a manner as to provide balanced emphasis on the health and appearance of the tree, adequate clearance for telephone Company lines, and cost.
c. Only those trees which constitute a definite service hazard and which are dead or defective, unsightly and have no chance for future development or which are weed trees and have no aesthetic value shall be removed.
d. All line clearance work shall be contracted, bidding with *qualified* tree contractors only.

To insure the effectiveness of this policy, a method of contracting has been initiated whereby line clearance work is awarded to contractors by areas for a period of one year at hourly rates for personnel and equipment. This contract is called a "Master Contract" and is awarded to the lowest bidder of the three or more qualified contractors invited to bid. The Master Contract provides definite advantages to both the contractor and the telephone company. For the contractor, it provides a reasonable guarantee of steady employment for the contract term with most of the risks inherent to contract work eliminated. To the telephone Company, it provides a means for economically handling the line clearance problem to the mutual satisfaction of the public and the telephone company. As a reward to the contractor for a job well done, the Master Contract may be renewed for another contract term without rebidding. Properly administered, the Master Contract will result in an improvement in the quality of our line clearance work and in the public reaction toward line clearance work.

Before a contractor is allowed to bid on line clearance work and after he is awarded a contract, there are certain requirements that he must meet. To be eligible to perform line clearance work for the telephone company, the contractor must meet four requirements: first, an independent contractor relationship must be established to the satisfaction of the telephone company by the contractor; second, the financial status of the contractor must be established as being satisfactory; third, the experience and know-how of the contractor to perform line clearance work must be established;

(Continued on Page 18)

Let's Look at the Facts About Soil Conditioners

By Howard K. Nason
Monsanto Chemical Company
St. Louis, Missouri

On December 29, 1951, at the annual meeting of the American Association for the Advancement of Science in Philadelphia, a new approach to the improvement of soil structure was described by a group of university, government and industry scientists. This approach, which involves the use of synthetic polyelectrolytes, resulted from pioneering research studies in the Central Research Department laboratories of Monsanto Chemical Company, Dayton, Ohio, and was developed in collaboration with many of the country's outstanding soil scientists. The detailed technical data presented at that meeting summarized the results of several years of work by more than 80 investigators, and constituted the first formal scientific presentation anywhere of these original discoveries.

The data were described as preliminary and were presented to acquaint soil scientists, and others interested, with the potentialities of this new chemical attack on an old problem. Since that time, broad-scale investigations by the original workers, and by additional collaborators here and abroad, have been carried forward vigorously with the objectives of delineating optimum methods of use, determining effectiveness with additional soil types, evaluating crop response, and accumulating data on the may other facets of this complex subject.

The tremendous interest, both in scientific and in popular circles, to which this novel development has given rise, should perhaps occasion no surprise, since the welfare of the soil is so vital to the welfare of man.

It is to the credit of the press that the original reporting was, on the whole, factual and thoughtful. However, it is not without significance that nearly all of the soil conditioners offered to the public since Monsanto's announcement are of hydrolyzed polyacrylonitrile, the only chemical of those we were testing, which we named in detail at Philadelphia.

There is today grave danger of public reaction against agricultural chemicals generally, and against soil conditioners particularly. Thus, it behooves us to examine this matter, in order that the sincere labors of reputable workers may not be jeopardized by the extravagant statements of some sellers.

Since Monsanto is the original developer of synthetic soil conditioners, we feel an obligation, for the good of the public and the industry, to discuss frankly the important fundamental principles concerned.

What may a soil conditioner be expected to do? Let us look at the basic facts.

Synthetic soil conditioners, like the polyuronides (plant gums) introduced by the normal decomposition of such natural structure-improvers as manures, composts and plant residues, act principally upon the clay component in soils and to a much lesser degree upon the finer silt components, to stabilize the particles against the dispersing or slaking action of water. If the soil has been worked by any suitable mechanical means (such as hand tools, rototillers or full-scale farm machinery) into the desirable granular condition characteristic of a good seed bed, then the action of the conditioner on the clay will produce agglomerates whose persistence in the soil will preserve the loose, porous condition which is necessary for good "tilth." This formation of stable agglomerates, or aggregates, with clays and fine silts is the primary action of soil conditioners, natural as well as synthetic. The beneficial effects which are obtained, such as increased aeration, augmented water-holding capacity, improved workability, more favorable microbial relationships, faster germination, increased emergence, faster early growth, increased root formation, improved drainage, decreased erosion, decreased crusting, and ultimately improved crop response, all come about as a result of the primary effect of aggregate stabilization. Only if this primary effect is produced to the necessary extent can the beneficial results—which add up to good tillage—be obtained.

The effectiveness of any soil conditioner, or the natural structure of any soil, may be determined by measuring the proportion of such aggregates which remain stable in the presence of excessive amounts of water. A standard procedure used for this purpose by soil scientists involves screening the soil sample through a series of sieves immersed in water and gently agitated for a fixed time. These data, expressed as per cent of the soil which is in the form of water-stable aggregates greater than one-fourth millimeter in diameter, may, if determined under exactly comparable conditions, be used to measure the effectiveness of a conditioner on a problem soil, to determine the amount of conditioner necessary to produce a worthwhile degree of aggregation, and to compare the relative effectiveness of different conditioners.

The action of a very effective synthetic polyelectrolyte soil conditioner (Krilium 6*) in stabilizing aggregates is shown in Table I for several soil components; similar results are obtained with other types of conditioners.

TABLE I. AGGREGATION OF SOIL FRACTIONS BY 0.05% KRILIUM 6

Fraction	*% Stable Aggregates 0.25 mm.*
Sand	0.0
Silt from Miami Silt Loam	39.
Clay from Miami Silt Loam	61.

(Previously unpublished data from these laboratories)

These data show that soil high in clay sizes will respond best, that soils high in silt particles will respond less markedly, and that sands will not respond at all to treatment with soil conditioners. Claims that a product will be effective on sand should, to put it conservatively, be viewed with considerable skepticism.

Another point to remember is that the action of soil conditioners is physical-chemical in nature, and that sufficient amounts must, therefore, be used if worthwhile results are to be obtained. This is illustrated by Figure 2, in which degree of stable aggregation obtained is plotted as a function of amount of Krilium 9 added to a Putnam silt loam. It is obvious that no results of any value will be obtained unless sufficient conditioner is used to give a significant proportion of stable aggregates. The optimum proportion required probably varies with the crop and with local conditions, and more detailed knowledge of this factor is one of the principle objectives of the extensive field studies which have been initiated as a result of the original discovery that aggregate stability could be controlled by addition of synthetic polyelectrolytes. Probably, however, a value of 50% or higher is desirable for many applications. For the soil in question, this would require about 0.08% of Krilium 9 on the dry weight of soil, or roughly 1-¾ pounds to treat 100 square feet to a depth of 3 inches.

A third point of importance is that conditioners *stabilize* soil structure but do not *create* it. In other words, a conditioner can only fix a soil in the state to which it has been converted by appropriate cultural practices. If the

* Krilium is the trademark adopted by Monsanto Chemical Company for soil conditioners manufactured by it.

(Continued on Next Page)

preparation has not produced a loose, porous seed bed with soil clusters of desired size, addition of a conditioner will not change this state of affairs. Since conditioner is absorbed tenaciously by the soil, it must be placed where its presence is desired. Application of a solution of a conditioner to a hard, crusted soil will not cause aggregation or any change in mechanical condition of the crust, and may in fact stabilize the undesired condition. Thus, there is no royal road to riches, insofar as soil is concerned, and mechanical preparation is essential to good results. The job cannot be done with a garden hose from a comfortable position in a lawn chair.

Does this mean that conditioners are ineffective if applied as a water solution? No, solution application can give satisfactory results if certain requirements are observed: The seed bed must be thoroughly prepared mechanically, sufficient conditioner solution must be applied to soak the soil down to the depth to which treatment is desired, and the solution used must be of proper concentration. The latter point, which is apt to be overlooked, is related to the basic physical-chemical principles of the adsorption phenomenon. If too strong a solution is used, the polyelectrolyte will be concentrated in the upper layer of the soil and the lower layers will not be properly treated.

If too dilute a solution is used, a large proportion of the polyelectrolyte molecules which constitute the active ingredient of the conditioner will not be adsorbed onto the clay particles, but will remain in the water phase and pass out of the surface soil unchanged.

This has been proven dramatically in some experiments in our laboratories using polyelectrolytes "tagged" with radioactive carbon atoms in the molecule. Dilute solutions were prepared and applied in large quantity to a soil sample, and the actual location of the conditioner molecules in the soil was determined by highly sensitive and precise electronic instruments. Under these conditions of use, over 95% of the conditioner molecules drained through the test soil and passed out in the water solution; less than 5% were adsorbed and retained by the soil. Little or no benefit could be obtained from such treatment. On the other hand, when soil was treated with radioactive conditioner in dry form, or with solutions of the proper concentration, 98.9% remained firmly attached to the soil particles, and only 1.1% was leached out by prolonged immersion in large quantities of water.

Thus it will be seen that under practical conditions of use solution treatment is difficult since relatively large volumes of liquid must be employed under very carefully controlled conditions.

How, then must soil conditioners be used if the consumer is to obtain the beneficial results he may be looking for?

First, he should have a soil which is capable of improvement, and one which is of a type which will give the desired response to treatment; for example, a soil containing appreciable proportions of clay and fine silt. Soils which already have good structure and soils which are predominately sand will not be benefited appreciably.

Second, the soil to be treated must be

Trees...

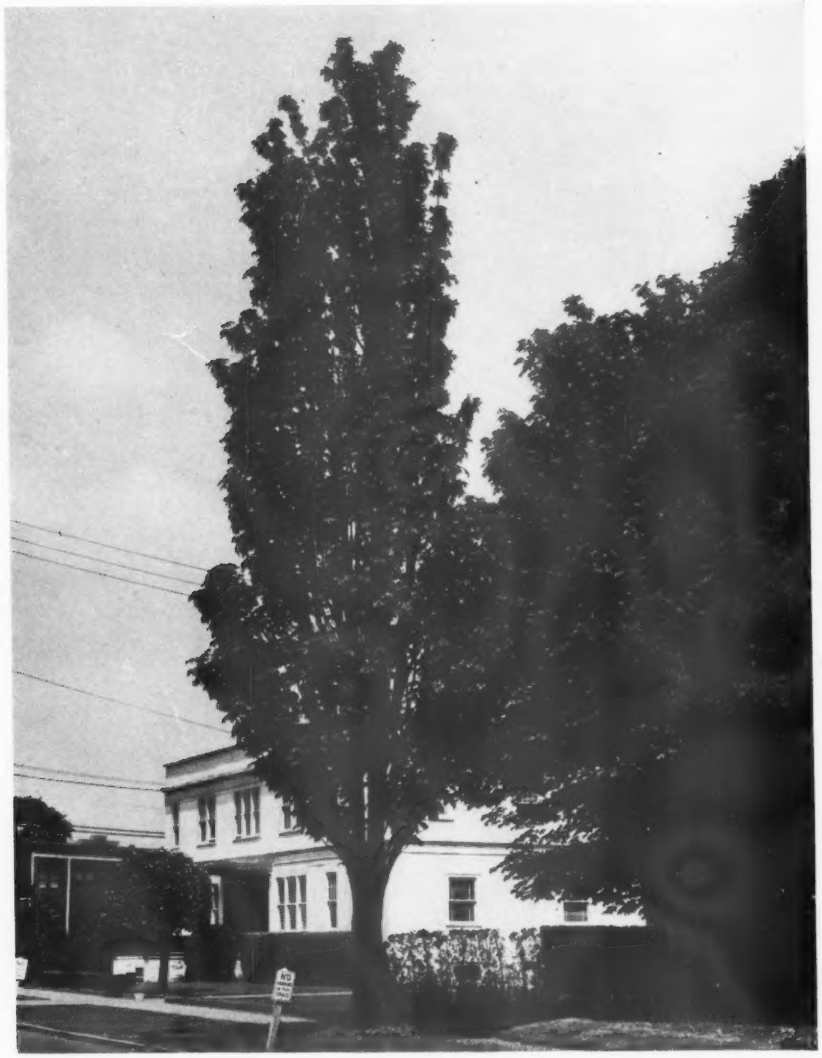
SHADE TREE

Uprite Bigleaf Maple (Acer Macrophyllum)

The pictures shown here were sent to us by Dr. Brian O. Mulligan, Curator of the University of Washington Arboretum at Seattle. The tree was found on a street in Seattle and represents a very distinct varietal departure in form from the species. The Bigleaf, or as it is also known, the Oregon Maple, is normally a large very broad spreading tree, definitely umbrageous. This upright selection represents a fine possibility as a narrow type tree for use where such a form is desired in Zone 6.

The species is characterized by perhaps the largest leaves of any maple. They turn orange in the fall; however, the tree is not too happy in late summer when dry weather may prevail. The foliage will burn badly somewhat in the manner of Aesculus hippocastanum. It is not considered a particularly desirable

SELECTION



shade tree because of this trait, also because of its brittle, more or less brash, wood which breaks up badly in wind storm. This weakness would not seem to be a factor in the variety judging from the short whippy appearance of the tightly appressed and upsweeping branches.

The tree in the right background of the dormant picture is a normal form according to Dr. Mulligan, altho most of the trees of this species observed by the writer in California and Oregon were characterized by heavier more horizontal branching, and a flatter broader head. The species will go to about 60 feet.

The measurements of this variety are as follows; height, 55 feet; diameter, 18 inches; width of crown, 15 feet. This tree should be propagated, it should fill a need in Zone 6 tree use. **E. H. S.**

prepared mechanically. This may be done before or after application of dry conditioners, or before solution application, but it must be done thoroughly since the conditioner can only stabilize whatever structure is produced by such preparation. The moisture content of the soil should be high enough to facilitate this preparation.

Third, sufficient conditioner must be added to produce the effect desired, and it must be incorporated to the depth to which improved soil structure is needed. For example, in the case of building new lawns, treatment to a depth of ½ inch may be sufficient to keep the soil in place and let the seeds germinate. For deeper rooting, such as in gardens, greenhouses and large-scale agriculture, treatment to a depth of three to six inches obviously may be required. Once in place and absorbed by the soil particles, it will not move appreciably with movement of ground water. Conditioner may be added in dry form (in which case it should be very finely powdered) or in solution, but in the latter case care must be exercised to use a sufficiently strong solution and to insure penetration to the desired depth. For most users, dry application will be found more convenient and less toilsome.

Fourth, and obvious, an effective product must be used. Most products now on the market would be effective to a greater or lesser extent if properly used (which in many cases is not as recommended in the directions supplied by the manufacturer), but there are a few products offered to the public which are complete nostrums of little or no effectiveness.

A fifth and obvious requirement is that the conditioner have no deleterious effects when properly used.

If properly applied, what results may be expected from the use of an effective soil conditioner?

Improved workability, improved aeration, improved water relationships and the other benefits mentioned early in this discussion certainly may be expected to result from the improved aggregate stability which proper treatment will confer. These in turn may be expected to benefit plant response, and in most cases this is the real benefit desired. More exact definition of the ultimate effect on plant response of treatment with Krilium soil conditioners is the aim of one of the most extensive field agricultural research programs ever undertaken. This program had been under way for several years at the time of the original announcement in 1951, and it has expanded at a rapid rate since then. Additional data are becoming available daily, and these results will be published through the appropriate scientific channels as fast as they can be correlated and interpreted. Some of these data may be of interest here.

Increased germination and increased emergence generally result from proper treatment. Pertinent data for radishes and carrots were presented at Philadelphia* by Hedrick and Mowry and by Martin, Taylor, Engibous and Burnette. Marked improvement in both yield and quality were reported. For example, with carrots the latter workers obtained the results shown in Table II.

(Continued on Next Page)

TABLE II. YIELD OF CARROTS ON BROOKSTON SILTY CLAY LOAM

Treatment	% Aggre. 0.25 mm.	Marketable Carrots Yield, Tons/Acre	Increase
None	36	15.4	.....
0.1% Krilium 6	77	17.1	11%
0.2% Krilium 6	84	18.7	21%

Improvement in quality also was reported.

These same investigators reported the results with sweet corn and red beets shown in Table III.

TABLE III. GROWTH OF CORN AND BEETS ON PAULDING CLAY
(August and September growth)

Treatment	% Aggre. 0.25 mm.	Increase over Untreated Plot Sw. Corn	Red Beets
None	45	0	0
0.05% Krilium 6	85	76%	15%
0.15% Krilium 6	94	102%	30%

Here again, a quality improvement was found for the root crop.

* These papers are published in the June, 1952, issue of Soil Science.

Fuller and Cords (Progressive Agriculture in Arizona. Vol. IV, No. 1, 1952) report the data for seedling emergence of alfalfa and sour clover as shown in Table IV. These tests were made in a soil which presented a problem of excessive alkalinity.

TABLE IV. THE NUMBER OF ALFALFA AND SOUR CLOVER SEEDLING EMERGING IN PIMA CLAY IN A 3-FOOT ROW AS INFLUENCED BY DIFFERENT SOIL CORRECTIVES (AVERAGE OF 6 PLOTS)

	Alfalfa		Sour Colver	
Treatments	Before 1st irrigation 17 days	After 1st irrigation 31 days	Before 1st irrigation 17 days	After 1st irrigation 31 days
Krilium 6	103	113	80	58
Sulfur	53	43	56	14
Gypsum	52	44	63	24
No treatment	60	39	52	32

17 and 31 days refer to time after seeding.

Other experiments with a variety of crops show yield increases with potatoes (45%), corn (20%), radishes (20 to 240%), Chinese cabbage (20%), soy beans and many others.

These data, although preliminary in nature, illustrate how crop response may be improved through the proper application of synthetic polyelectrolyte soil conditioners.

What is the difference between soil conditioners? The public must be confused by the deluge of advertising claims on this score, and by the 30 or more products which have been rushed onto the market since April of this year, in many cases with fantastic claims. With one exception, all of these products are based on hydrolyzed polyacrylonitrile formulated as the sodium salt, and they are marketed in two forms. The liquid forms are water solutions, containing generally 15% or 18 to 20% of solids, equivalent to about 1.3 and 1.8 pounds of solids per gallon, respectively. The solid forms contain about 20% or 83% of active ingredients. Some brands are reputed to contain fertilizing ingredients. Introductory advertising usually presents the product as "the miracle soil conditioner you have read about."

The single exception is Monsanto's Krilium 6 and formulations of it, such as Merloam* soil conditioner for home gardens and Loamaker* 631 soil conditioner for commercial agriculture. As has been announced, Krilium 6 and its formulations are based on a modified vinyl acetate maleic polymer.

In the original announcement at Philadelphia, both Krilium 6 and Krilium 9 were described, the laboratory codes "CRD-186" and "CRD-189," respectively, being employed since no commercial designations had yet been adopted at that time. CRD-189 was described as "made by the hydrolysis of polyacrylonitrile to what is predominately a sodium salt of the polyacid." CRD-186 was identified as another carboxylated polymer.

* Trademark of Monsanto Chemical Comanpy.

On Miami silt loam, Krilium 6 is from 30 to 100% more effective at practical levels of aggregation than the product derived from acrylonitrile. On Putnam silt loam the margin is even greater, ranging from 100 to 310%. Similar differences have been found for other soils, and these differences are substantiated by practical experience in the field.

Perhaps it will seem significant to you that all of the products which have appeared since the announcement of the discovery that synthetic polyelectrolytes may be used effectively as soil conditioners are of the type whose chemical identity and method of preparation was described most completely in that original presentation, with the sole exception of those products being developed by Monsanto. It might even appear that the imitators, in their haste, had overlooked significant data. As our experience accumulates, the desirability of selecting the best chemical conditioner for the particular job to be done becomes steadily more apparent. For example, in certain types of erosion control work special formulations of polymers derived from Krilium 9 have been found particularly efficient.

From some of these remarks you may have deduced that many of us, who have been connected with this work since its inception, are disappointed at the irresponsibility to which the competitive situation is degenerating and which if continued can discredit what is a fundamental and basically-sound new contribution to man's welfare. Perhaps a documentation of the basis for this lament may be of interest.

Table V shows pertinent data of this

(Continued on Page 16)

TABLE V

Comparative Data on Products Advertised for Use as Soil Conditioners

Product	Form	% Solids or Active	Type	Rate of Application Recommended	Price to Consumer	% Active Component on soil at rate recommended	Cost of Treatment $/100 sq. ft.	Quality of Treatment Obtained
A	Liquid	18-20	Acrylic	1 gal./1000 sq. ft. 40,000 lbs.	$18.00/gal.	*	1.80	Ineffective
B	Liquid	18-20	Acrylic	1 gal./2000 sq. ft., 6" deep	9.95/gal.	0.0019 to 0.0045%*	0.50	Ineffective
C	Liquid	18-20	Acrylic	1 gal./300 to 1000 sq. ft.	9.95/gal.	*	3.32-0.99	Ineffective
D	Liquid	15	Acrylic	1 gal./1500 sq. ft. 3-5" deep	9.95/gal.	0.0035%	0.66	Ineffective
E	Liquid	18-20	Acrylic	1 gal./1500 sq. ft.	9.95/gal.	0.0045%*	0.66	Ineffective
F	Liquid	15	Acrylic	1 gal./150 sq. ft. 3" deep	.....	0.04%	.....	Fairly effective
G	Liquid	18-20	Acrylic	1 gal./1000 to 2000 sq. ft.	18.00/gal.	*	1.80-0.90	Ineffective
H	Liquid	18-20	Acrylic	1 gal./1000 sq. ft. 2-3" deep	9.50/gal.	0.01%	0.99	Ineffective
I	Liquid	.....	Acrylic	1 qt./50-100 sq. ft.	2.95/qt.	0.014 to 0.028%	2.95-5.90	Ineffective to slightly effective
J	Liquid	15	Acrylic	1 gal./1500 sq. ft. 1" deep	9.95/gal.	0.01%	0.66	Ineffective
K	Solid	83	Acrylic	1 lb./200 sq. ft. ½" deep	4.50/lb.	0.10%	2.25	Effective
L	Solid	83	Acrylic	1 lb./200 sq. ft. ½" deep	4.20/lb.	0.10%	2.10	Effective
M	Solid	87	Acrylic	1 lb./200 sq. ft. 3" deep	5.00/lb.	0.02%	2.50	Slightly effective
N	Solid	40	Acrylic	1 lb./100 sq. ft. ½" deep	.....	0.10%	.....	Effective to ½" deep
O	Solid	92	Acrylic	1 lb./240 sq. ft. ½" deep	.....	0.10%	.....	Effective
P	Solid	20	Acrylic	3 lb./50 sq. ft. 3" deep	1.32/lb.	.051%	7.90	Effective
Q	Solid	83	Acrylic	1 lb./200 sq. ft. 1" deep	4.95/lb.	.054%	2.47½	Effective
R	Solid	25	Copolymer	1 lb./150 sq. ft. ½" deep	1.39/lb.	0.05%	0.93	Effective

* Essentially no treatment obtained because application by spraying surface of non-prepared soil recommended.

Propagation of the Hickories

By F. L. O'Rourke
Department of Horticulture, Michigan State College

The genus *Carya* comprises all the hickories and pecans found in the United States. The eighth edition of Gray's Manual of Botany lists the following species as being native to the United States:

Carya aquatica — Water hickory, Bitter Pecan
Carya cordiformis — Bitternut, Swamp Hickory
Carya glabra—Pignut
Carya illinoensis—Pecan
Carya laciniosa—Shellbark, Kingnut
Carya ovalis—Sweet Pignut, False Shagbark, Red Hickory
Carya ovata—Shagbark
Carya pallida—Pale Hickory
Carya texana—Black Hickory
Carya tormentosa (C. alba)—Mockernut

Nut growers are interested primarily in the pecan and the shagbark, although a few selections have been made of the shellbark species. The bitternut is quite often used for rootstocks for the shagbark and shagbark hybrids.

Hickories, like other nut and tree species, do not come true from seed, so superior selected clones are propagated by budding and grafting on other trees known as rootstocks. These rootstocks are produced from seed.

Seed Propagation

Investigations by Barton (1) showed that some seedlings were produced when the nuts were planted immediately in a warm greenhouse without pretreatment, but that germination was markedly increased when the nuts were held in a cool moist environment from one to four months before bringing into the greenhouse. She also found that fall planting of hickory nuts resulted in a good stand of seedlings the following spring if the soil was mulched, but that the freezing and thawing of unprotected ground resulted in an exceedingly poor stand of seedlings.

Burkett (6) advocated stratifying pecan seed over winter in moist sand and planting in moist soil in the very early spring. He observed that thin-shelled nuts germinate more quickly than thick-shelled ones, and warned against "damping-off" fungi which often killed young seedlings.

Brison (5) stated that some nurserymen prefer seed of certain pecan varieties as Riverside and Burkett for rootstock purposes as these produce strong vigorous seedlings. He reported that while the pecan seed does not have a rest period, germination is increased by stratifying in moist sand for 2 to 3 weeks or soaking in water, changed daily, for 4 to 5 days previous to planting.

Propagation by Layering

No records are available in regard to any hickory species or variety other than pecan having been propagated by any method of either soil or air layering. The writer (14) while experimenting with aerial layering in 1945 found one instance of root production on a hickory where the branch was girdled at the base of the one-year wood. This method offer possibilities, especially that now polythene plastic is available for retaining moisture in the moss about the girdle or wound on the layered branch.

Gossard (9) reported success in producing roots from the tops of small grafted and budded pecan trees by trench layering and from older trees by aerial layering with marcot boxes. He indicated that a favorable combination of etiolation, moisture, rooting medium, and a root-inducing chemical was desirable for successful rooting.

Propagation by Cuttings

Hardwood cuttings of pecan were rooted by Stoutemyer and O'Rourke (23) in 1938 by first callusing the bases of the cuttings in warm moist peat moss, and then treating with an agueous solution of indole butyric acid before planting. Both roots and shoots grew well for three to four weeks and then the shoots wilted and died. It was observed that the roots were thickened and presented an abnormal appearance. Trials during succeeding years gave no better results and the experiments were discontinued. Cuttings taken from native hickories during these same years failed to produce roots.

Romberg (17) reported a small measure of success in rooting hardwood stem cuttings to which young seedlings had been grafted by the inarch method. The influence of the seedling on the nourishment of the cutting was gradually diminished by girdling caused by a copper wire which was tied about the seedling stem.

Apparently root cuttings of pecans and other hickories have never been tried. In 1896 Corsa (7) observed that "when the lateral roots of the pecan are broken by the plow, the ends of these roots frequently send up thrifty shoots." Such a response would indicate that adventitious shoots may arise from roots and that root cuttings may be successful.

Propagation by Grafting

A search of the literature failed to reveal a discussion of any method of bench grafting with hickories, although presumably it must have been tried. Propagators may have been discouraged in using bench graft methods by the sparse roots usually found on two-year seedlings. It is suggested that undercutting and root pruning the seedlings several times while in the nursery row should produce a more adequate root system which would transplant well after grafting. Brison (5) remarked that bench grafting is not used in the propagation of pecans in Texas on account of transplanting difficulties.

Commercial nurserymen now prefer to bud hickories and pecans rather than to graft, but formerly Reed (15) reported the whip-and-tongue method was used on thrifty one-year seedlings in the nursery row. It is conceivable that the cleft graft could be used at this stage when the diameter of stock and scion are quite similar but no record of its use is available.

Top-working or grafting in the branches is commonly practiced on seedling trees and sometimes used to change varieties in the orchard. Reed (15), Sitton (19), Rosborough et al (18), MacDaniels (11), and Stoke (22) have described various methods that have proven successful. Practically all agree that the bark graft or a modification thereof is best. Morris (12), Benton (3), MacDaniels (11), Wilkinson (25), and others have shown that a greater per cent of survival is secured when the stocks are cut 10 days to 2 weeks before grafting. During this time the stubs heal somewhat and excess bleeding is decreased. It has been reported by Becker (2) that the success of walnut grafting is greater when the grafts are set just after the leaves are full grown but no such data is available for hickories. The use of paper bags or other shading device over the scion is advocated by Morris (13), MacDaniels (11), Shelton (20) and others.

Propagation by Budding

Patch budding is now almost universally used by commercial nurserymen in the propagation of hickories and pecans. Patches are usually cut with a double-bladed knife although some use the rectangular Jones patch-budding tool. The "plate" or "skin" bud is also used to some extent. The thick bark of

(Continued on Page 14)

Grass, Trees Restore Strip Mined Areas

Grass is restoring strip mined areas in England and the United States, according to two speakers on the Sixth International Grassland Congress program.

O. G. Williams of Great Britain's National Agricultural Advisory Service told congress delegates, "We are learning how to regrass strip-mined areas without replacing the topsoil and how to use chemical fertilizers under these conditions. Since our coal industry is nationalized, we are able to control the restoration of strip-mined areas for coal. These areas are leveled off after mining is completed and three feet of soil-forming material is replaced."

William C. Bramble, forestry department at Pennsylvania State College, said most of the reclamation in Pennsylvania strip mining sections has consisted of planting trees and shrubs. Most stripped land is hilly or otherwise unfit for crop production and reforestation is relatively cheap.

State law requires operators to put up bonds of $300 per acre before they begin mining in Pennsylvania. They are required to level the land and replace a certain depth of topsoil before they may redeem the bond.

F. L. Duley of the Soil Conservation Service at Lincoln, Nebraska, reported on runoff studies. Duley said bare soil loses the top seven inches of soil in 24 years. It would take more than 3,000 years to lose this amount of soil from grassland.

New Fungicide in Production

Mr. F. W. Hatch, manager, Julius Hyman & Company Division, Shell Chemical Corporation, Denver, Colorado, announced today that the soil fungicide which has been widely tested under the code name CBP-55 will be in commercial production during the next four months at the company's Denver plant.

CBP-55 has demonstrated outstanding effectiveness as a soil fungicide in control of soil pathogens in tobacco seed beds and for control of root-rots of strawberries and nursery stock. The production schedule assures the availability of CBP-55 for large scale spring treatments. Pilot plant stocks are adequate for fall supplies.

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Hickories

(Continued from Page 11)

hickories and pecans discourages the use of the shield or "T" bud.

Budding is usually done in late summer with mature buds of the season growth which remain dormant until the following spring. Occasionally dormant budwood taken in winter is held in cold storage until the bark of the stock slips in the spring. These spring-set buds are forced the same season by cutting the stocks back shortly after setting. Patch-budding is described by Reed (15) and by Rosborough et al (18). Reed (15) mentioned that it may be advisable to make the cuts in the stock from one to three weeks before the bark is removed so that the healing process may be under way at the time the bud patch is inserted.

Storage and Handling of Scions and Budwood

Shelton (20) reported an easy and unique method of keeping scions moist by storing in a closed container with a small amount of sodium sulphate (Glauber's salt). Slightly moist peat moss is an excellent packing material. Brison (4) reported that a temperature of 32° F to 38° F in storage is satisfactory for keeping the buds dormant, and that a few days from 80° F to 85° F will stimulate cambial activity so that the patches will "slip" easily when cut. Scionwood is sometimes dipped in wax, parafin, or plastic resin before storing in order to prevent loss of moisture and guard against pathogenic organisms.

Waxes and Wound Dressings

Sitton (19) used a large number of variously formulated waxes on pecan and found that the most successful from the standpoint of graft survival was one composed of 10 parts rosin, 2 parts beeswax, and 1 part filler such as kieselguhr, talc, or aluminum powder. Under Louisiana conditions a light-colored wax was preferable to dark colored one. Asphalt emulsions were not satisfactory.

Rootstocks and Interstocks for Hickories

Reed (16) summarized the rootsock studies at Beltsville, Maryland, by stating that pecans were best on pecan seedlings and that shagbarks were successful on either shagbark or pecan rootstocks. He reported a lack of congeniality between shagbark and bitternut hickory. Smith (21), however, found that pecan stocks were unsuccessful for shagbarks as few scions lived and growth of those which survived was poor. He also reported that bitternut was practically as good as shagbark for shagbark varieties. He stated that pignut was absolutely useless as a stock for shagbark. Weschcke (24) reported that shagbark varieties grew well on bitternut but also indicated that a slow growing variety would be stimulated in growth by working on pecan stocks which are more vigorous in growth than the other hickories. Dunstan (8) reported that pecan provides a perfectly satisfactory rootstock for shagbark, shagbark hybrid, and hican varieties. A number of varieties have been tested over a period of several years with favorable results as shown by lasting unions and better than average yields.

The Fairbanks hybrid has often been used as an intermediate stock between bitternut and some shagbark varieties and Last (10) has stated that the variety Rockville is useful for interstock purposes on account of its exceptional vigor.

Nursery Problems

Hickories and pecans have long taproots with few branches and hence do not transplant well. Some few have grown the seedlings for one year in beds underlain with wire screen netting or have undercut the seedlings to promote branching of the roots. The stocks must grow two years from seed to attain a diameter permitting of patch budding and must remain one or two years more to allow the scion to form a tree. The resulting plant is large in both root and stem and requires careful handling in digging, shipping, and planting in the permanent location. The vicissitudes which befall the production of the northern hickories are often so great as to discourage nurserymen who otherwise would grow them. This is an unfortunate fact but a real one, as the would-be purchaser often learns when he attempts to buy named varieties of hickories. The situation with the pecan is much better, due perhaps to the greater demand for such trees but also to the greater ease of propagation in general nursery practice.

Conclusions

Good varieties of hickories bear good nuts and more people should plant good trees which should be produced by nurseries with well-branched fibrous root systems so that they will transplant easily. Research is needed to determine practical methods of propagation which will permit of inexpensive quantity production of superior named varieties of shagbark and shagbark hybrid hickories.

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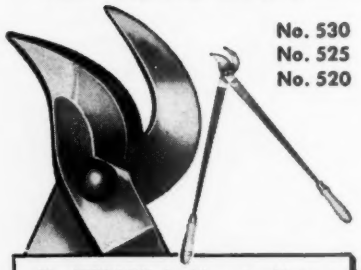

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The *TIFFANY* double cut, efficient "draw-in" cutting action and 100% hammer forged alloy steel parts PLUS the *Seymour Smith* improved bolt and nut joint, through handle and riveted grip fastening and thinner cutting edges.

3 SIZES: 30" ($5.75) 25" ($5.50) 20" ($5.25)

"TELEPHONE" TREE PRUNERS
Reinforced malleable iron head. Tempered steel blade. Compression coil spring. Spruce poles with telescoping ferrule joints. Cable chain works through ball bearing pulley. Cuts up to 1".
No. 11-18, Complete pruner with rope and 18' pole.....$16.00
No. 11 (Pruner Head only) $4.20
Prices for No. 12 Head (for 1½" cutting) and extensions on request.

PROFESSIONAL PRUNER

No. 124 8" $3.75 No. 125 9" $4.25

The standard "Double-Cut" pruner for the expert. Also, the finest of them all, No. 90, 8". $4.75.

NEW, FINEST EVER
PRUNING SAWS

No. 922 22" blade $4.60

No. 514 14" blade $2.75

A new Seymour Smith development, with blades of finest Swedish steel. Fastest, easiest cutters on the market. Complete line of 6 models covering all requirements up to chain saw work.

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OUR 102nd YEAR
The Line of Quality

Prices slightly higher Denver and West

See your dealer — or write for free, descriptive literature.

SEYMOUR SMITH & SON, INC.
Main St., Oakville, Conn.

Basal bark spraying of weed trees

gets results

Like This!

Spraying the basal portions of trees and brush with Esteron® 245 in diesel oil or kerosene is a new development in economical forest management. This *effective* technique—spraying the base of brush stems or tree trunks—controls "weed" species shading out young pines and other desirable trees. Basal bark spraying is more economical than cutting, and extensive regrowth which usually follows cutting is greatly reduced. Basal spraying can be done *any time of year.*

Esteron 245 contains powerful, proved, low-volatility propylene glycol butyl ether esters of 2,4,5-T. The oil carrier helps penetrate the outer bark—the chemical reaches the live tissues and and kill is achieved. (For foliage application during the growing season, use Esteron Brush Killer containing low-volatility esters of 2,4,5-T and 2,4-D.)

Both Esteron 245 and Esteron Brush Killer are useful also for spraying cut stumps to prevent resprouting.

Our sales and technical men are available for consultation and assistance. Write for full particulars on "weed" tree control.

Esteron 245 and Esteron Brush Killer

Containing new low-volatility esters

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Cut Shade Tree Spraying Time

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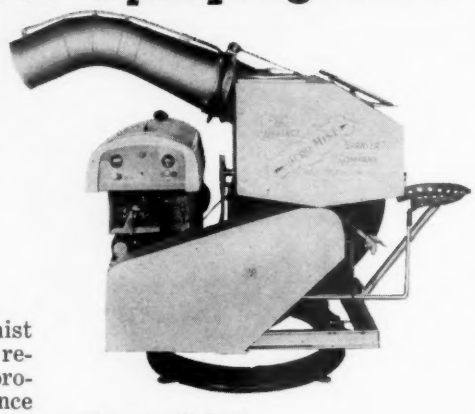
AERO-MIST L-80 SPRAYER



This fast, easy-to-operate mist sprayer is unequaled for best results in shade tree spraying programs. The versatile Lawrence L-80 handles all formulations . . . gets at all leaf-eating insects and fungus infections . . . thoroughly covers the highest trees with penetrating mist spray . . . provides lowest operating costs in labor and materials.

COMPARE THESE FEATURES

High pressure pump . . . mechanical agitation . . . 42 H.P. water-cooled engine with clutch . . . 360° rotation . . . finger-tip control . . . weighs only 1400 pounds . . . 8,000 c.f.m. at 150 m.p.h.

LAWRENCE AERO-MIST SPRAYER CORP.

3 BANK ROW GREENFIELD, MASS.

GET YOUR MEN READY FOR WINTER NOW

Hooded Sweat Shirts — Double Thickness
Plain Sweat Shirts — Single Thickness

Order now to get them in late November and December
Navy Blue, Dark Green, Gray, Scarlet
Small, Medium, and Large

Heavy 100% Wool Shirts — Sport Shirts
Heavy Tug-O-War Pants and Breeches with Jackets
in Oxford Gray or Forestry Green
All Sweet-Orr Unconditionally Guaranteed

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16" and 10" Skinners' Boots — 16" Engineers' Boots
with Biltrite soles — 11" slip on Field Boots
Laced-to-toe Logger Boots with Hi-heel
Irish Setter Hunting Boots

KARL KUEMMERLING, Inc.

401 Cherry Ave., N.E., Canton 2, Ohio

Soil Conditioners

(Continued from Page 10)

kind for a number of products advertised recently in the daily press or in trade publications. It will be noted particularly that only a few of these products, when used as recommended, are capable of producing any appreciable improvement in soil structure, and that all of them are of the acrylic type whose comparative efficiency has been discussed above.

To recite some of the statements which are made in advertising would discourage you still further, and this you will be spared here. Any reader of the daily papers can scarcely have escaped them.

This situation is, we believe, a temporary one, and the industry surely will soon settle down to a sound course.

When selected for effectiveness, properly applied, and used in sufficient quantities, synthetic polyelectrolyte soil conditioners stabilize aggregation of clay and silt type soils, and in this way confer better workability, increased drainage and resistance to erosion, increased aeration, added waterholding capacity, reduced slaking and crusting, more favorable microbial relationships, increased germination, faster emergence, better root growth, and in many cases increased yield and quality. Intensive research activity in our laboratories and by university and government scientists, here and abroad, have established a solid basis of factual data. More than 400 competent technologists are participating in this program. Responsible use of this information by the industry will insure sound development of this new concept in soil management.

Improved McCulloch Saw

Announcement of new sizes and new low prices for 1953 McCulloch 3-horsepower chain saws was made today by C. F. Breer, vice-president, McCulloch Motors Corporation, Los Angeles. The smallest model of this popular power saw now has a 14-inch blade, and sells for the new low price of $285, f.o.b. the factory. Other straight blade models now range up to a length of 36 inches. The bow model has a capacity of 15 inches. All are available now at McCulloch dealers.

Although the new price tag on the McCulloch 3-25 chain saw is the lowest in the history of the company, performance of the new models has been increased instead of lowered, with added important engineering features. Carburetion has been improved, providing smoother operation at full power in all positions and at all angles, and the new HH chain has been made standard equipment, which increases speed of cutting.

Professional pruning without tiring!

ASK FOR ATKINS Silver Steel®

Here's the Atkins Tuttle Tooth Pruner that gives you the professional touch on any job. Here's a comfortable cutter—one that grips easily, holds firm, feels good in your hand after hours and hours.

Atkins gives you the extra sharp teeth that speed up the job, and cut down pruning effort and time. Atkins gives you an edge that stays keen longer—for fewer sharpenings, more sawing hours.

The No. 40 Tuttle Tooth Pruner is just one of the many specially-designed *Silver Steel* pruning saws. You'll find the right one for every pruning job, for every purse, for every person. See famous Atkins pruners at your hardware store or lumberyard.

AAA ATKINS ALWAYS AHEAD

Silver-Flash
FOR PRUNING SPEED!
Ask to see the Atkins Silver Flash No. 6 for easy, fast cutting of small limbs and twigs. Smaller teeth—3-inch section of 8-point peg for easy starting. Taper point, hardwood handle, pistol grip design.

ATKINS

E. C. ATKINS AND COMPANY • INDIANAPOLIS 9, INDIANA

Line Clearance

(Continued from Page 6)

and fourth, the contractor must take out and maintain such insurance coverage as will meet the telephone company minimum requirements.

To a large portion of the public, the only personal contact experienced with the telephone company comes from the periodic visits of the tree trimming crew clearing lines for the telephone company. For this reason, it is important that the contractor's crew and equipment be neat in appearance, that the crew personnel be courteous and considerate and that the work be performed in a workmanlike manner. The telephone company has a moral as well as a legal obligation to the public to see that the line clearance work is done in such a manner as to merit the approval of the public. To insure that this obligation is fulfilled, there are certain standards and requirements that we expect the contractor to meet as to his personnel, tools and equipment, performance of the work, records and reports, company relations and public relations.

Probably the most important element in the success of any business is its personnel. This is particularly true of the line clearance business for each tree presents a separate and distinct problem that must be tested individually. While the ideal condition would be the use of tree personnel proficient in all standard tree surgery practices, such a condition is neither practical from our viewpoint or that of the contractor. To perform our work efficiently, economically and to the mutual satisfaction of both the property owner and the telephone company, the crew should be proficient in the use of ropes, climbing, making proper cuts for trimming, shaping and removing trees, and should be proficient in the proper methods of cutting undergrowth to clear rights-of-way. Rarely, if ever, are we required to fill cavities, spray trees for insect or disease control, fertilize trees, install lightning protection or perform any of the other tree surgery practices used in the care and maintenance of ornamental shade trees.

The basic crew used for our work consists of three men, a working foreman, a climber and a groundman. This crew may be altered to fit the job at hand by adding additional climbers or groundmen as required.

The personal appearance of the crew is important. While uniform work clothing for the crew is not required, such dress is desirable. In any event the clothing worn should be neat in appearance and should be changed sufficiently often to maintain this appearance. Each member of the crew should be encouraged or required to shave daily and to visit the barber shop for haircuts as often as required.

The equipment furnished by the contractor is expected to be neat in appearance and is expected to be maintained to a standard at least equal to our own. As a result of a study of the size of truck in relation to the cost and efficiency of the work, the minimum size truck used for our work is a one-ton truck with a body loading space of at least 38½ square feet. In most cases, a 1½ ton truck with a special line clearance body is used. It is required that the name of the contractor be clearly stenciled on each truck.

The main requirement as to personal tools, i. e., saws and pruners, is that adequate tools shall be carried in each truck to supply the members of the crew and with enough spare tools to take care of normal breakage. In addition, tools must be available to provide for an enlargement of the crew upon reasonable notice. Power tools must also be available for use upon short notice. Each contractor is required to maintain the tools and equipment on his time and not on the job. While no control is exercised over the make and model of the tree trimming tools, the contractor is expected to provide his crews with tools which are suitable for the job.

Each crew is expected to perform the work in a workmanlike manner. Most tree contractors use the work "Expert" in their company name and the telephone company expects the crew to justify this name in the day to day operation of the crew.

Our company, like all other successful business concerns, must keep the money spent in balance with the money received with a reasonable allowance for profit. This, of necessity, limits the money available for line clearance work and emphasize the necessity for economical line clearance work. As a means for rating the efficiency of each crew and for estimating proposed expenditures, cost and volume records are kept. The basis for these records is the weekly work report which shows the day to day operation of the crew for a period of one week. The value of the cost and volume records is in direct proportion to the accuracy with which they are completed by the foreman of each crew so that the importance of accurate reports is constantly stressed.

Some of the causes of friction between the telephone company and the tree contractor have been the failure of the con-

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TRIM HEDGES
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Model 102 AH-115M
Cut costs, save time, do better work. Use electrical tools on every job beyond the reach of highline power. With electric hedge trimmers, grass clippers, saws, drills, hammers, spades, tampers and other electrical equipment, one man can do the work of several. You can have electricity available anywhere with Onan Portable Electric Plants. Mounted on dollies, Onan Electric Plants can be wheeled right to the job. Plenty of plug-in electric power is instantly available. Many lightweight A.C. and D.C. models—400 to 5,000 watts.
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tractor to get complete instructions before starting a job, the failure of the contractor to clear up those instructions which were not clear to him, the failure of the contractor to keep the telephone company informed as to the progress of the work and the failure of the crew foreman to report his work location twice daily as required. The faults listed above are all contractor failures. The telephone company also fails in its obligation to the contractor in many instances. Since line clearance work is foreign in most respects to the day to day work of the telephone supervisor, it falls to the contractor to insure that he has all the information necessary to perform the job at hand efficiently.

The importance of healthy public relations to the telephone company cannot be over-emphasized. Each tree clearance crew member must be an emission of good will for the telephone company. It is imperative that they be courteous and considerate of the property owner under all conditions. It is important that the property owner clearly understands just what work is to be done and that such work is permissible. In performing the work, extreme care must be exercised to insure that only that work to which the property owner has consented is performed. The telephone company realizes that the nature of the work precludes the complete elimination of claims and complaints. However, it is expected that claims and complaints be held to a minimum and that those that do result be settled quickly and to the greatest satisfaction of the property owner as is reasonable and practical.

Hickories

(Continued from Page 14)

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BIG TREE MOVER

Handles up to 12-inch trees.

- √ "Rocks back" for easy loading and unloading.
- √ "Rocks forward" for balanced load.
- √ Two sizes . . . fits any standard truck chassis.
- √ Superstructure removable for other truck use.
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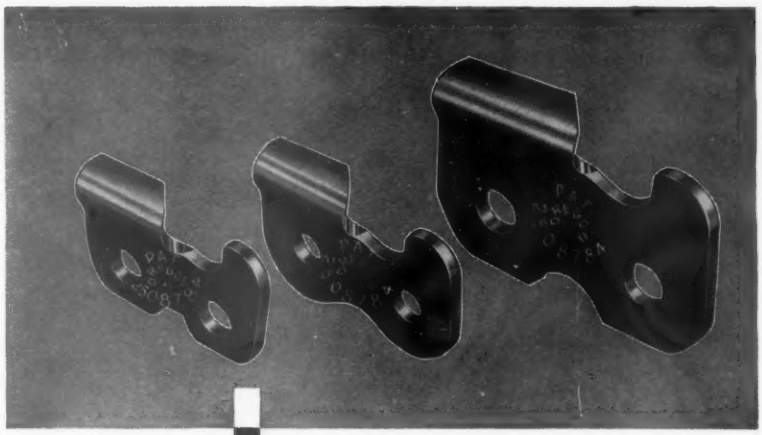

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● There's nothing false about these teeth. They are "natural-born" cutters, known among chain saw users to be speedy, steady, trouble-free performers in all kinds of timber.

● No chain saw tooth ever has had so excellent a reputation for all-around cutting efficiency, for built-in endurance, for quick, easy filing by the operator. Guaranteed, patented, approved in the woods, Fast-File Tooth makes Oregon Chipper Chain the most desirable replacement chain for your saw. Order it from your dealer or fill in and mail the coupon below. Your chain saw efficiency curve will go up when you've installed an Oregon Chipper Chain.

The Oregon Chipper Chain is fully protected by U. S. Pat No. 2508784. All chains copying this design and not marked with this patent number are infringements. Be sure. Buy only chain bearing this number.

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Without obligation to me, please send me cost, details, nearest dealer's name for Oregon Chipper Chain.

Make of Saw:_____ Bar Length:_____

Name_____

Address_____ City, State_____

NAA NEWS

By PAUL E. TILFORD, *Secretary*
Box 426, Wooster, Ohio

Meetings

Discussions of spraying problems, overhead expenses, methods of charging customers, industry statistics, accident prevention, and other problems connected with the operation of tree service companies made up the Monday, August 18, program of the National Arborist Association meeting at Hotel Statler, Boston.

Following formal opening of the meeting by President Oscar Warner, Landscape Forester, Waterbury, Connecticut, a panel was introduced. Members of the panel were Norman Armstrong, Chapel Hill, North Carolina; George Goodall, Portland, Maine; H. N. Engledow, Indianapolis, Indiana; and Winston Parker, Moorestown, New Jersey. Among the points brought out in the panel discussion were that the newer miticides, such as Aramite, Ovotran, Dimite and EPN generally gave good control of mites and seldom caused any injury. High concentrations of DDT as recommended for Dutch elm disease control were considered of definite value in controlling the disease but some concern was expressed because of the dying of branches and thinning out of trees sprayed year after year. The dormant DDT spray must be applied before growth starts otherwise it will cause injury.

Industry Statistics

A summary of industry statistics compiled by questionnaires submitted earlier in the year to the membership was given by Paul E. Tilford, Executive Secretary of the Association. The summary was based on averages from 90 questionnaires.

With respect to wages, the average hourly rate of pay reported for foremen was $1.76, tree men or climbers $1.46 per hour, and common labor $1.20 per hour. On the average pay rates reported this year were from eight to 16 cents per hour higher than last year. Individual pay rates varied considerably as might be expected since the reports came from many widely separated parts of the country.

The average hourly charge reported for tree work by those who charge on an hourly basis was $3.02 per man hour for general or private work. When a contract price is given for private tree work the average rate figured on was reported as $3.25.

Two-thirds of those reporting a minimum charge for spraying and the average minimum charge reported was $6.64. A minimum charge for spraying is almost necessary otherwise the operator will lose money on the small and single tree jobs.

Accident Prevention

An excellent talk, "More Effective Accident Prevention—A Challenge That Cannot Be Denied" was presented by Everett W. Martin, Educational Projects Director, Liberty Mutual Insurance Company. In emphasizing that insurance rates are based on the number of accidents that occur, Mr. Martin said that the frequency of accidents involving insurance payments was greater for tree work than in many other industries. One of the reasons given for recent increases in insurance rates was that court awards in accident cases were at present generally higher than in previous years.

Unsafe conditions and unsafe practices were given by Mr. Martin as the basic causes of accidents. Arborists were urged to keep accurate records of accidents and to devise means of preventing similar accidents in the future. "Thorough analysis of an accident," he said, "often provides the key to preventing the occurrence of a similar accident in the future."

A survey of accidents during the past year within the National Arborist Association membership showed that many of the most serious accidents did not involve trees, but were due to either truck or automobile wrecks.

Karl Kuemmerling, chairman of the Association's Safety Committee, presented a colored movie on "Using the Chain Saw Safely." Mr. Kuemmerling said that he and his associates prepared this film as an experiment to see if amateurs could make a worthwhile safety film. He may be assured that the answer is "yes" for this film.

Roger Sohner, San Anselmo, California, concluded the Monday program with a discussion of his use of the Hi-Tender and other power tools for overhead line clearance work. Mr. Sohmer said that in his opinion the Hi-Tender and similar equipment will be used for some of this work in the future. Such equipment eliminates most of the climbing and are great time- and labor-saving devices when used with power pruners. On the west coast Sohmer is using the Hi-Tender on city streets and highways in public utility line clearance operations.

Dinner and Business Meeting

The Association's annual business meeting and dinner were held in the Georgian Room of the Statler hotel on Tuesday evening with 86 attending.

Officers elected for the coming year were as follows:

President—Sidney McNeal, McNeal Tree Service, Tiffin, Ohio.

First Vice-President—J. Gerald Corr, Blume System Tree Experts, Houston, Texas.

Second Vice-President—H. N. Engledow, Midwestern Tree Experts, Indianapolis, Indiana.

Secretary—Hackett C. Wilson, Wilson Tree Company, Shelby, N. C.

Treasurer—George Goodall, Goodall Tree Expert Co., Portland, Maine.

Immediate Past President—Oscar F. Warner, Landscape Forester, Waterbury, Connecticut.

Directors—Roger Sohner, Sohner Tree Service, San Anselmo, Calif., (for regular three-year term). Ross Farrens, Farrens, Farrens Tree Surgeons, Jacksonville, Florida, continues on the Board for one year and Ray Gustin, Jr., Landscape and Tree Service, Silver Springs, Md., for two more years.

Following the dinner each past president of the Association was presented with a certificate in appreciation and recognition of his leadership. There are 13 past presidents of the Arborist Association: Charles F. Irish, 1937-38; H. M. Van Wormer, 1938-39; Norman Armstrong, 1939-40; Vance I. Shield, 1940-41; Karl Amalia, 1941-42; William S. Speed (deceased), 1942-44; Edward W. Higgins, 1944-46; Ross Farrens, 1946-47; Karl Kuemmerling, 1947-48; Albert W. Meserve, 1948-49; C. L. Wachtel, 1949-50; Walter P. Morrow, 1950-51; and Oscar F. Warner, 1951-52.

Professional Court Fees

Among the various items of business acted on was the following resolution which was adopted by the Association:

"Whereas, We as arborists or tree experts are often called upon to serve as expert or technical witnesses in court cases, and

"Whereas, There is no approved charge for such services; therefore

"Resolved, That the National Arborist Association, Inc., recommend when its members serve as expert witnesses in furnishing technical testimony at court cases before juries or judges that a minimum charge for such services

be established and that such charge receive the endorsement of the National Arborist Association, Inc.

"Resolved, That such charge be at the rate of one hundred dollars ($100) for each day or portion thereof plus expenses."

The Association will hold a winter meeting early in 1953.

New Members

The following two new members have joined the Association recently: Nels J. Johnson Tree Experts, Evanston, Illinois; and Ellis A. Kowinsky, Landscape Forester, Birmingham, Michigan.

Stewart Willson's Death

It was with deep regret that we received word of the recent death of Stewart H. Willson. Stewart conducted a successful tree and landscape service at Hazardville, Connecticut.

He will be greatly missed by his many friends in the National Arborist Association and the National Shade Tree Conference.

COLOR SLIDES

Our sparkling color transparencies of specimen landscape plants and plantings will **really** help you sell. Free subjects list with prices. Sample slide 2x2", 50c.

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case lot prices of our Black Asphalt Liquid Tree Paint as an introduction to the BARTLETT line of Tree Trimming Equipment. Packed, 48 Pints or Half Pints, 24 Quarts ar 6 1-gallons to a carton. Proper pruning and after-treatment is important for favorable results . . . and BARTLETT tools and supplies make pruning an easy task.

ALSO WITH OUR COMPLIMENTS . .

let us forward you a copy of our newest catalog describing the pruners, trimmers, saws, safety belts, saddles, etc., which have proved so popular with workers that they have become standard throughout the country.

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DISSTON does it faster... BETTER

The new Disston DA-211 25" Bow Saw in action.

THERE IS A DISSTON CHAIN SAW WITH MERCURY GASOLINE ENGINE FOR EVERY WOODCUTTING JOB

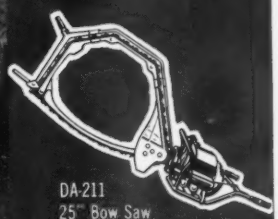
DO-101 with helper handle

One-Man DO-101

DO-101 16" Bow Saw

The DA-211 slices through 16x16 timbers in no time at all

DA-211 with helper handle



DA-211 25" Bow Saw

No matter which Disston Chain Saw you choose, you're sure of getting a first quality professional tool . . . one that has saved time and labor for utilities, shipyards, railroads, constructors and industrial plants the country over.

The Disston DA-211 is powered by a reliable air-cooled 2 cylinder, 2 cycle Mercury Gasoline Engine. The Mercury develops 9 hp at 5500 rpm, gives the Disston an extremely favorable power-weight ratio. Automatic clutch. Self-rewinding starter. Automatic chain lubrication. Full-swivel transmission. The narrow-profile guide rails (from 2′ to 7′) reduce binding; the fast-cutting chains slice through 18" oak in less than 16 seconds. The DA-211 and its lightweight counterpart, the smaller DO-101, make perfect working partners. The DO-101 is ideal for one-man operation, and can be converted quickly into a lightweight two-man unit with rail lengths up to 40".

You will find a complete line of Disston power saws at dealers the country over. Any of these men will be glad to demonstrate how a Disston does it faster . . . better. For the name of the one nearest you, write **Henry Disston & Sons, Inc.**, 8JK Tacony, Philadelphia 35, Pa.

FREE! *Send for your free copy of the new fact-packed and picture-packed booklet "How to Cut Costs and Make Money with Disston Chain Saws."*

Authors and Books

The following books may be ordered from TREES Magazine, Box 5607, Cleveland, Ohio

TREES, by Herbert S. Zim and Alexander C. Martin. Simon and Schuster, New York. 160 pages. 130 color illustrations 4"x6". $1.00 paper cover, $1.50 cloth cover.

Here is a fine little pocket handbook for the amateur tree hunter. The book is realistically illustrated in color, showing leaf, fruit, twig and full tree, with range map for native species. Very few exotics are listed. This should be an excellent book for school use and we believe it would be a fine gift for commercial arborists and nurserymen to give as Christmas presents to clients, or just for general distribution as excellent tree propaganda.

TREES OF THE WEST, by Elizabeth Chapman Willier. Pageant Press, 130 West 42nd St., New York, 29 pgs., illus. $1.50.

A nicely written appreciation of a few of the great trees of the West—Sequoias, Myrtle, Cypress, Pines and Joshua, are beautifully extolled by the author.

COLORADO EVERGREENS, by Robert E. More, The Denver Museum of Natural History, Denver, Colo. 89 pgs. illus.

Mr. More has long experimented with conifers at his Glenmore Arboretum, Buffalo Creek, Colo., to determine the species best adapted to the rigorous climate of Colorado. This is an exceptionally accurate account of tree habits in Colorado and coupled with the outstandingly beautiful illustrations, with which the book is profusely supplied, it makes a splendid contribution to the library on tree lore.

DECIDUOUS ORCHARDS (Second Edition) by William Henry Chandler. Lea & Febiger, Washington Square, Philadelphia 6, Pa. 436 pgs., illus. $6.50.

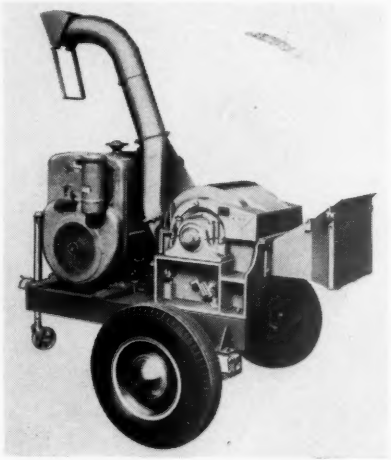
America is rich in its many fine fruit trees, from the common apple, pear, plum and peach, to the more exotic fig and pistachio. These and virtually all other deciduous trees and their fruits are discussed in this practical book. It gives undergraduate and graduate students, and those taking advanced courses in horticulture, an orderly presentation of structure, function and orchard practices. Because of the manner of presentation, this book is *invaluable to owners and operators of deciduous orchards* and to those working with evergreen orchards who want an intelligent understanding of the competing deciduous orchards.

For the second edition, Professor Chandler has included many of the new and important discoveries made in recent years and includes a realistic view of the importance of *clonal varieties* for successful orcharding. Changes and additions appear throughout. The textmatter has been brightened and enlivened considerably by careful re-editing of the entire book and *special attention is paid to the relation of the subject to the orchard industry.*

Another feature of this edition is the improved teaching and study sequence, which is the result of a practical rearrangement of chapters. The text is now divided into four sections. The first is devoted to the general nature, structure and processes of deciduous trees and their fruit. Section two covers the environmental features important in the orchard, influences of temperature, soil characteristic and effects of water and nutrient deficiences. The third part takes up and helps to solve the problems met in propagation, planting and pruning. The final section discusses deciduous orchard species, their structure, processes and responses, as well as their relation to each other. Each section's nature and purpose is explained to the student. The bibliography is fully up-to-date. Of particular, and very great value to the arborist and nurseryman are the chapters on "Essential Elements and Some Others that Influence Trees" (No. 12)—"Nutrients For Trees" (No. 11) and "Deciduous Tree Roots and the Soil" (No. 9). The information in these chapters is priceless and makes the book, generally, a splendid source of basic information.

ELEVENTH SHORT COURSE ON ROADSIDE DEVELOPMENT. Ohio Department of Highways, Columbus 15, Ohio. 183 pages.

This Eleventh Short Course held as usual in Columbus, Ohio thru the cooperative efforts of the School of Architecture and Landscape Architecture of Ohio State University and the Ohio Department of Highways, was as always well attended and supplied some very down to earth information that could prove of functional value to many outside the roadside field. An outstanding paper was that given by Karl Dressell of Michigan State "Trees—Their Place and Part In The Complete Highway." An outstanding display at the meeting, and illustrated and described by Frank Cope in the proceedings, is a complete highway model. This model was 31 feet long and up to 61 inches wide. Assisting in its construction were Loy Steveley; Charles Ross; Robert Ranney; Hugh Kennedy; Henry Minert and Ralph Wheeler all members of the Ohio Department of Highways.



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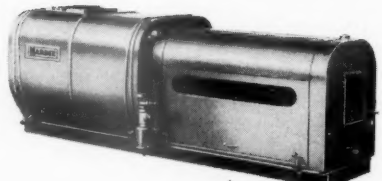

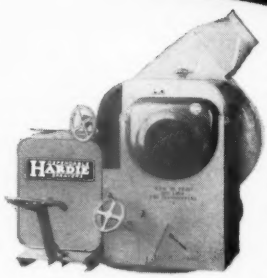

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